

CHAPTER3 : CHEMICAL FORMULAE AND EQUATIONS ANSWER
BAB 3 : FORMULA DAN PERSAMAAN KIMIA JAWAPAN

Objective Questions/ Soalan objektif

1. C	4. B	7. C	10. A	13.A
2. D	5.A	8. B	11.B	14.A
3 D	6. B	9. B	12. B	15.A

Structure Questions/ Soalan struktur

[illegible]

		0.1 mol of AgNO ₃ will produce 0.1 mol of NO ₂ 0.1 mol AgNO ₃ akan menghasilkan 0.1 mol NO ₂ Volume of NO ₂ Isipadu NO ₂ = 0.1 x 24 = 2.4 dm ³	1 3												
2	a	K: Copper/ kuprum L: magnesium	1 1												
	b	Metal K is less reactive, Metal L is more reactive K logam yang kurang reaktif, L logam yang reaktif	1												
	c	(i) Add hydrochloric acid to a conical flask containing zinc granules. Tambahkan asid hidroklorik ke dalam kelalang kun yang mengandungi ketulan zink flow the gas released through anhydrous calcium chloride alirkan gas yang tebebas melalui kalsium klorida kontang	1 1												
		(ii) Zn + 2HCl → ZnCl ₂ + H ₂	1												
	D	<table><tr><th>Element Unsur</th><th>L</th><th>O</th></tr><tr><td>Mass Jisim/g</td><td>33.31 – 32.28 = 1.03</td><td>33.99 – 33.31 = 0.68</td></tr><tr><td>Number of mol Bilangan mol/mol</td><td>$\frac{1.03}{24} = 0.043$</td><td>$\frac{0.68}{16} = 0.043$</td></tr><tr><td>Ratio of mol Nisbah bilangan mol</td><td>1</td><td>1</td></tr></table> Empirical formula / Formula empirik LO 1	Element Unsur	L	O	Mass Jisim/g	33.31 – 32.28 = 1.03	33.99 – 33.31 = 0.68	Number of mol Bilangan mol/mol	$\frac{1.03}{24} = 0.043$	$\frac{0.68}{16} = 0.043$	Ratio of mol Nisbah bilangan mol	1	1	1 1 1
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	E	Heating, cooling and weighing are repeated until a constant mass is obtained Proses pemanasan, penyejukan dan penimbangan diulangi sehingga mendapat jisim yang tetap	1 1												
3	a	Chemical formula that shows the simplest ratio of number of atom for each element in the compound/ molecule. Formula kimia yang menunjukkan nisbah teringkas bilangan atom bagi setiap unsur yang terdapat dalam suatu sebatian/molekul	1												
	b	To remove air (oxygen) in combustion tube Menyingkirkan udara (oksigen) dalam tiub pembakaran	1												
	c	copper(II) oxide // [any suitable metal oxide] kuprum(II) oksida // [sebarang oksida logam yang sesuai]	1												

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	e	(i) $\text{XO} + \text{H}_2 \rightarrow \text{X} + \text{H}_2\text{O}$ (ii) No of mol / <i>Bil. mol oksida X</i> = $\frac{2.4}{64+16}$ // 0.03 mol 0.03 mol of X oxide produces 0.03 mol of X <i>0.03 mol oksida X menghasilkan 0.03 mol X</i> Mass of X / <i>Jisim X</i> = 0.03 x 64 = 1.92 g	1 1 1 1 10												
4	a	Reactants : Na ₂ SO ₄ // sodium sulphate <u>and</u> BaCl ₂ // barium chloride Products : BaSO ₄ // barium sulphate and sodium chloride // NaCl	1 1												
	b	Na ₂ SO ₄ + BaCl ₂ → BaSO ₄ + 2NaCl	1												
	c	(i) Number of mole of BaCl ₂ = $\frac{4.16}{137 + 2(35.5)}$ = 0.02 mol Number of mole of Na ₂ SO ₄ = Number of mole of BaCl ₂ = 0.02 mol	1 1												
		(ii) Number of mole of BaSO ₄ / <i>Bil mol BaSO₄</i> = Number of mole of Na ₂ SO ₄ / <i>Bil mol Na₂SO₄</i>	1												

		<div><div>= 1 mol</div><div>Mass of BaSO₄ / Jisim BaSO₄ = 1 × [137 + 32 + 4(16)] = 233 g</div></div>	1								
d	<table><tr><th>Element</th><th>Fe</th><th>Cl</th></tr><tr><td>Number of mole /<i>mol</i></td><td>$\frac{34.5}{56} = 0.62$</td><td>$\frac{65.5}{35.5} = 1.85$</td></tr><tr><td>Ratio of mole/<i>nisbah teringkas</i></td><td>$\frac{0.62}{0.62} = 1$</td><td>$\frac{1.85}{0.62} = 3$</td></tr></table> <div>Empirical formula is / <i>formula empirik ialah</i> FeCl₃</div>	Element	Fe	Cl	Number of mole / <i>mol</i>	$\frac{34.5}{56} = 0.62$	$\frac{65.5}{35.5} = 1.85$	Ratio of mole/ <i>nisbah teringkas</i>	$\frac{0.62}{0.62} = 1$	$\frac{1.85}{0.62} = 3$	1 1 1 10
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Essey Questions / Soalan Esei

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1(b)(ii)	[chemical formulae correct/ <i>formula kimia betul</i>] [chemical equations corret/ <i>persamaan kimia seimbang</i>] $\text{LO} + \text{H}_2 \rightarrow \text{L} + \text{H}_2\text{O}$	1 1 2															

1(b)(iii)	<ol style="list-style-type: none"> 1. Collect gas into test tube/ <i>kumpul gas kedalam tabung uji</i> 2. Place a glowing splinter into the mouth of test tube/ <i>dekatkan kayu uji menyala pada mulut tabung uji</i> 3. No Pop sound heard/ <i>sehingga tiada bunyi pop</i> 	1 1 1 3
1 (c)	<ol style="list-style-type: none"> 1. L and copper is less reactive than hydrogen/ <i>L dan Kuprum kurang reaktif daripada hidrogen</i> 2. Magnesium is reactive metal/ <i>Magnesium logam reaktif // Magnesium react vigorously with oxygen/ magnesium bertindak balas cergas dengan oksigen</i> 	1 1 ... 2
1(d)(i)	<ol style="list-style-type: none"> 1. Reactant/ <i>Bahan tindak balas</i> : Hydrogen & oxygen /hidrogen & oksigen Product/ <i>Hasil tindak balas</i> : Water/ air 2. Hydrogen & oxygen are gases/ water is liquid/ <i>Hidrogen & oksigen dalam keadaan gas /Air dalam keadaan cecair</i> 3. 2 mol hydrogen bertindakbalas dgn 1 mol Oksigen menghasilkan 2 mol air 	1 1 1.... 3
1(d)(ii)	<ol style="list-style-type: none"> 1. mol air = 18 gram/ 18 = 1 mol 2. form equations/ <i>daripada persamaan</i> 2 mole of water produce from 1 mole of oxygen <i>2 mol air terhasil daripada 1 mol oksigen</i> 1 mole of water produced from $\frac{1}{2} \times 1 = 0.5$ mole of oxygen <i>1 mol air terhasil daripada $\frac{1}{2} \times 1 = 0.5$ mol oksigen</i> 3. Volume of oxygen isipadu oksigen = 0.5×22.4 = 11.2 dm^3 	1 1 1 1..... <u>4</u> 20